MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE INSTRUCTOR GUIDE

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MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE INSTRUCTOR'S GUIDE

1. PURPOSE

This Field Training Exercise (FTX) was developed by the Chemical Casualty Care Division (CCCD) to accompany the Medical Management of Chemical and Biological Casualties Course (MCBC) presented at the U.S. Army Medical Research Institute of Chemical Defense (USAMRICD). This guide may be used to develop an FTX for any medical unit training for chemical casualty management.

The goal of this exercise is to familiarize course participants with: a) the proper use, capabilities, and limitations of military personal-protective, detection, and decontamination equipment; b) the processes necessary to manage contaminated casualties; and c) the challenges associated with the care of contaminated casualties.

Because this is a familiarization exercise, hands-on participation is encouraged, but attendee performance at the stations is not graded.

2. REFERENCES

Field Management of Chemical Casualties Handbook, 2nd ed., Chemical Casualty Care Division, USAMRICD, June 2000.

Medical Management of Chemical Casualties Handbook, 3rd ed., Chemical Casualty Care Division, USAMRICD, June 2000.

Textbook of Military Medicine, Part I, Medical Aspects of Chemical and Biological Warfare, Office of the Surgeon General, Borden Institute, Washington D.C., 1997.

US Army Field Manual 8-10-7, "Health Service Support in a Nuclear, Biological, and Chemical Environment", 22 April 1993.

US Army Soldier's Manual of Common Tasks, 91B.

3. SCOPE

This FTX is designed primarily for military physicians, nurses, physician assistants, medics and Chemical Corps personnel. Civilian health care providers may also benefit from this exercise.

4. APPLICABILITY

This training applies to all personnel who may be involved in the pre-hospital management of chemical-warfare agent casualties.

5. GENERAL GUIDELINES

The components of the exercise are the safety briefing, the MOPP-donning drill, the casualty assessment exercise, and the teaching stations. The teaching stations include: the Emergency Medical Treatment (EMT) Tasks station, the EMT Discussion station, the Litter-Casualty Decontamination station, the Ambulatory-Casualty Decontamination station, and the Hotline station.

The FTX is designed for classes of up to 100 students. This same design will work for even larger groups if extra instructors are added to existing stations and/or extra stations are added. The Casualty Assessment Exercise takes about an hour. Each teaching-station rotation takes 20-25 minutes. The entire FTX should take no more than 4 hours.

NOTE: Station-Instructor Guides (Appendix A) contain information about station set-up, equipment, and major teaching points. Duplicate and distribute these guides to the station instructors before the day of the FTX. Issue the “Student Guide to The Field Training Exercise” (Appendix B) to participants one or two days before the FTX. Review the Student Guide with the class on the afternoon before, or the morning of, the FTX.

a. Site Set-up

The list of equipment necessary for the FTX is identified in Appendix C. Most of the equipment needed for this exercise is available at a Battalion Aid Station. The stations should be set up in a lane representing the basic layout of a typical Patient Decontamination Site: the Casualty Assessment area (representing the triage area), followed by the EMT stations, the Decontamination stations, and finally the Hotline station. This FTX may be executed indoors within an area the size of a basketball court if necessary.

b. Safety

The safety procedures followed during exercises at USAMRICD are described in “Emergency Medical Service Standard Operating Procedures” (Appendix D). Use your local safety SOP when executing this FTX as part of an exportable course. The CCCD SOP may be used as a template for developing a local safety SOP.

Prior to the FTX, confirm that military participants have no medical profile(s) that would preclude wearing the protective mask and Battle Dress Overgarment (BDO). Civilian participants must be medically cleared to wear the protective mask for

training. Request that civilian participants complete and return to the Officer in Charge (OIC) the “Protective Mask/Respirator Medical Clearance Form” (Appendix E). A physician’s signature confirms that the participant is at low risk for medical problems associated with protective mask wear.

To reduce the risk of heat injury, the Physical Fitness Uniform should be the uniform of the day during hot weather. Equipment should include the chemical protective mask with hood, BDO, butyl rubber gloves with inserts, overboots, canteen and web belt. Ensure that participants begin the exercise with a full canteen and know where to obtain additional water during the exercise.

At a minimum, the following issues should be discussed in a safety briefing presented just prior to the start of the FTX: 1) the potential for heat injury when wearing MOPP gear, 2) the importance of and the procedure for proper hydration, 3) the potential for sharps injury at the EMT Tasks station, 4) the procedure for reporting a true medical emergency during the FTX, 5) the requirement to wear gloves if handling M9 detector tape, and 6) the mandatory use of litter straps and four-man carry if transporting mock casualties by litter.

Directions for use of the Wet-Bulb Globe Thermometer (WBGT) are found in Appendix F. Use WBGT data to determine appropriate work-rest cycles during the FTX.

c. MOPP Donning Drill

If volunteers from the class will act as casualties for the casualty-assessment exercise (see section d., Casualty Assessment Exercise), they should prepare themselves for the casualty-assessment exercise while the remainder of the class completes the MOPP Donning Drill.

The stepwise procedure for donning the protective mask and BDO should be demonstrated to the group sometime during the course and/or just before the MOPP Donning Drill. Follow the procedure outlined in the Soldier’s Manual of Common Tasks.

Give the class 9 seconds to don the protective mask. Assess their performance. Then give the group an additional 8 minutes to don the remainder of the protective ensemble. The station instructors should be available to monitor performance and assist class members who have difficulty completing the task. Remind class members to use the “buddy method” for donning the gear and checking for correctness of wear. When 8 minutes have elapsed, instructors should assess participants for proper wear of the ensemble.

For additional control during the FTX, squads may be identified by color. Following the MOPP donning drill, issue a different-color plastic tape to each squad leader and instruct the leaders to affix a strip of tape to the BDO sleeve of each squad member.

d. Casualty Assessment Exercise

In this exercise volunteers enact a chemical exposure scenario from a script (Appendix G), allowing participants to practice the clinical assessment of chemical casualties. Details of the exercise are described in the “Casualty Assessment Exercise Instructor’s Guide” (Appendix A).

NOTE: Distribute the Casualty Scripts to the volunteers a day or two before the FTX so they can become familiar with their scenario and ask questions about the script.

Option 1, casualty assessment as one station in the rotation: If volunteers can be obtained from outside the class, this exercise can be completed as one of the stations in the rotation. Answers to the scenarios can be presented for class discussion after the entire FTX is completed (answers are provided on the casualty script). The discussion normally takes between 30 minutes and an hour.

Option 2, casualty assessment as a separate exercise: Class members may be used as volunteer casualties. This exercise, including a discussion of the answers to the exercise, can then be completed after the MOPP Donning Drill and before the station rotations. If possible, no more than four students at a time should assess each casualty. Therefore, for classes with more than sixty participants, two groups of 12 casualties (24 volunteers from the class) should be used. In this case, each of the 12 scenarios is duplicated and enacted by two volunteers in two separate circles. Half of the class assesses one group of 12 casualties while the other half of the class assesses the second group of 12 casualties who enact the same scenarios.

6. LIST OF APPENDICES

Appendix A – Station-Instructor Guides

Casualty Assessment Exercise

Emergency Medical Treatment - Tasks Station

Emergency Medical Treatment - Discussion Station

Litter-Patient Decontamination Station

Ambulatory-Patient Decontamination Station

Hotline Station

Appendix B – Student Guide to The Field Training Exercise

MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX A

STATION-INSTRUCTOR GUIDES

CASUALTY ASSESSMENT EXERCISE INSTRUCTOR'S GUIDE

1. OBJECTIVE

For each of 12 simulated casualties, students are given two minutes to assess the casualty, determine a triage category, and recommend management. Students discuss their assessment and management recommendations for these casualties immediately following the exercise or at the end of the FTX.

2. EQUIPMENT

NOTE: If "Option 2" (see section d., Casualty Assessment Exercise) is used with a large class, **double** the number of items listed below as necessary to create **two** circles of 12 casualties.

-"Casualty Scripts" (Appendix G)
- 12 litters
- MOPP gear and protective masks for 12 mock casualties (if training MOPP is unavailable, casualties should at least wear the protective mask)
- Canteens and/or a water point for casualties
- One roll of M9 detector tape or masking tape to simulate M9
- 12 blank Field Medical Cards (FMC)
- Note-taking outline (Appendix H): enough copies for each student in the class to record data on each casualty. Issue 3 two-sided copies per student.
- Sharpened pencils, one for each student in a rotation
- Moulage supplies: field dressing x 3, cravat x 3, splint x 1, blood simulant (e.g. "Karo" syrup with red food coloring added), red greasepaint or rouge, and red marking pen to add spots to M9 tape.
- Stopwatch or wristwatch with a second hand
- Bullhorn, whistle, or other signaling device to signal a station rotation (optional)

3. PERSONNEL

- 1 station instructor / timekeeper
- 12 (or 24) volunteers to play mock casualties

4. SET UP

Issue training MOPP gear, a protective mask, and a different Casualty Script (Appendix G) to each of the 12 volunteers. The scripts include a scenario, the acting script, the moulage required, data for the FMC, and the answers to the problem. Casualties will require 30-60 minutes to fill out their FMCs, don their MOPP gear, apply moulage, and learn their scripts.

Position the 12 litters on the ground in a large circle with enough space between litters to allow small groups of students to gather around each litter. Casualties will

lie on the litters in sequence (#1-12) with their feet facing toward the center of the circle.

5. SAFETY

Ensure that the casualties have a ready source of water. Encourage them to rehydrate when not “performing” their scenario for students. Provide casualties ready access to latrine facilities and permit them to take breaks, if necessary, when not performing their scenario.

Instruct casualties to dress comfortably under their BDO. On warm days, for instance, casualties should wear the PT uniform instead of the BDU under their BDO.

Advise casualties whose scenarios include “wandering around” not to resist the students’ attempts to return the casualty to a litter.

6. IMPORTANT POINTS

Issue a pencil and a set of note-taking outlines to each student at the beginning of the rotation. Give the following instructions to the students:

You will have 2 minutes to assess each of the 12 casualties. Sources of information about the casualty include the Field Medical Card, the patient’s history, and careful observation.

Casualties have been instructed not to offer information. You must ask the casualty for specific information about his/her condition. Do not attempt a physical examination. The Field Medical Card reflects the objective signs that should be present.

Moulage has been added as a prompt to indicate the existence of additional injury and does not necessarily represent the patient’s condition accurately.

The note-taking outline is supplied to help you organize your assessment of the casualty. You may not have time to complete the entire form for each casualty during the two-minute evaluation period. However, since you will be asked to discuss each case following the FTX, make enough notes about each casualty to help you remember the casualty and the management you recommend.

If this exercise is one of the six stations in the rotation (Option 1), proceed as follows:

At the beginning of the rotation, position a team of 2-5 students at each of the first several casualties (no more than 4 students per casualty if possible). When the teams are positioned, start the clock and tell them to begin. After 1 minute and 45 seconds, tell the teams to stop and move to the next casualty. Give the teams 15 seconds to move to the next casualty and start the clock again. The teams will rotate clockwise from one casualty to the next until each team has seen all 12 casualties. When the teams complete the assessment of their last casualty, give the signal for all stations to rotate. Collect the pencils from the group and direct them to their next station. You may wish to give some signal to the other station instructors when 5 minutes or 2 minutes remain in a rotation.

Do not position students at all 12 casualties at the beginning of a rotation. Casualties would then have no opportunity to take a break. If, for example, there are 60 students in the class, there will be 10 students in each rotation. Two-person teams will start at each of the first five casualties. This means that each casualty will “perform” his/her scenario five times during each of six rotations (30 times during the FTX). Increasing the size of the teams will reduce the workload for the casualties. However, with larger teams around each casualty, each individual student will find it more difficult to participate in the assessment. The FTX OIC should decide on the balance between team size and number of performances from each casualty.

If this exercise is completed separately, before station rotations begin (Option 2), proceed as follows:

One day before the FTX: Distribute the Casualty Scripts to volunteers from the class so they can become familiar with their scenario and ask questions about the script. Day of the FTX: Following the safety briefing, the volunteer casualties should prepare themselves for the exercise while the remainder of the class completes the MOPP Donning Drill. Position a team of two to five students at each of the first several casualties. Leave at least four casualties free so that during the exercise, each casualty will have an opportunity to assess the other casualties. Remind the casualties that when they are not performing their scenario they should participate in assessing the other casualties in the circle. When the teams are positioned, start the clock and tell them to begin. After 1 minute and 45 seconds, tell the teams to stop and move to the next casualty. Give the teams 15 seconds to move to the next casualty and start the clock again. The teams will rotate clockwise from one casualty to the next until each team has seen all 12 casualties.

When all teams have assessed all 12 casualties: give the class a 15-minute break, reassemble the entire class in a comfortable, shaded area, and discuss the answers for each scenario.

EMERGENCY MEDICAL TREATMENT
TASKS STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

Students practice the types of clinical tasks normally performed at the EMT station on the dirty side of the hotline: **a.** practice the proper technique for use of an autoinjector and an M291 SDK; **b.** in MOPP IV, perform medical tasks that require fine-motor skills (endotracheal intubation and intravenous catheter insertion).

2. EQUIPMENT

- 2-4 field tables or litters on litter stands to hold the manikins and equipment.
- M291 Skin Decontamination Kits, one per student if possible.

Autoinjectors – If trainers are used, supply one MARK I Kit (trainer) for each student in a rotation. Trainers must be reset after they are "discharged". The reset device is a small, black-plastic ring supplied with the trainer kits. If live (expired) MARK I Kits are used, provide one MARK I Kit for every two students in the FTX.
- 1 pair BDO trousers, rolled up, or covering a sandbag to simulate a casualty's thigh (if live autoinjectors are used)
- 1 sharps container (if live autoinjectors are used)

Intubation equipment – One or more intubation manikins. If more than one manikin is used, increase the numbers of the following items accordingly.
- 1 laryngoscope with functioning batteries
- 2 laryngoscope blades with functioning lamp (one Miller #2 or #3, one MacIntosh #3 or #4)
- 1 endotracheal tube, size 8.0 ID with functioning cuff
- 1 syringe, 10cc to inflate cuff
- 1 stylet
- Silicone spray to lubricate endotracheal tube (optional)
- 1 bag-valve-mask. Resuscitation Device, Individual, Chemical (RDIC) preferred.

Intravenous access equipment – One or more IV manikins (arm). If more than one manikin is used, increase the numbers of the following items accordingly.
- Intravenous catheters, 18 or 20 gauge, quantity sufficient to allow each student one or two insertion attempts
- 1 liter, 0.9% saline solution (do not use glucose-containing solutions in manikin)
- 1 liter, 0.9% saline solution with red food coloring added (blood simulant to fill veins of manikin)
- 2 intravenous tubing sets
- Alcohol prep pads, tape, tourniquet (optional) to add realism
- 1 sharps container
- Several pair of 7 mil, butyl rubber (tactile, protective) gloves
- Trash receptacle

3. PERSONNEL

- 2 instructors, preferably with training in intubation and IV therapy (e.g. 91W). If students are practicing with live Mark I kits, one instructor's full attention should be focused on this task.

4. SET UP

Autoinjectors – If trainers are used, students can activate the autoinjector against their own thigh or their buddy's thigh. If live autoinjectors are used, students can inject into a pair of rolled up BDO trousers or into a sandbag. For safety, do not permit students access to live autoinjectors until they are to perform the injection. Each student will discharge EITHER an atropine OR a 2-PAM Cl autoinjector. Provide a sharps container.

Intubation – Check the manikin, the laryngoscope/blade combination, and the endotracheal tube cuff/pilot balloon for proper function. Lubricate the endotracheal tube with silicone spray as necessary.

Intravenous access equipment – Connect an IV bag containing blood simulant to a manikin arm and fill the veins per manufacturer instructions. Set out IV-start equipment. Provide a sharps container and a trash receptacle.

Manikins for all three skills (autoinjector, intubation, and IV) may be placed on litters, field tables, or on the ground (on tarps or shelter halves) if necessary, since medical personnel may be required to perform these skills with the casualty lying on the ground. Provide adequate space between the three tasks and each manikin to allow students easy access and room to maneuver.

5. SAFETY

Autoinjectors (live) – Before beginning practice with live autoinjectors, warn students not to touch the needle end of the autoinjector (green end for atropine, black end for 2- PAM Cl). Instruct students to hold the autoinjector like a pen, between the thumb and index finger, and to brace the heel of the hand against the casualty's thigh while injecting.

Following an instructor demonstration of safe technique, students should step up to this station one at a time. Issue one autoinjector to the student. Closely supervise the student's technique as he/she injects the antidote into a BDO or sandbag. The student will place the discharged autoinjector immediately into a sharps container.

After the FTX, seal and dispose of sharps container per unit SOP. Any accidental needle sticks will be reported immediately to the FTX OIC.

IV access – Ensure the proper use of IV catheters. Do not permit students to recap needles. Needle should be placed immediately into sharps container following successful cannulation of vein. After the FTX, seal and dispose of the sharps container per unit SOP.

6. IMPORTANT POINTS

M291 Skin Decontamination Kit – If adequate stock is available, issue an M291 SDK to each student. Discuss the purpose and proper use of the kit. Demonstrate and allow students to practice decontaminating their hands with the M291 SDK. For safety, do not require students to decontaminate their face. Instead, demonstrate (without using the actual kit) the technique for decontaminating the face, neck, and ears.

Autoinjectors – Demonstrate to the group the proper technique for using the autoinjector (see SAFETY section above). If trainers are used, students may then practice on their own. Monitor students to ensure proper technique. Assist them to reset the trainer as necessary.

If live MARK I Kits are used:

a. One student at a time will step forward to discharge EITHER an atropine OR a 2-PAM Cl autoinjector into a sandbag or a rolled-up BDO under the close supervision of the station instructor.

b. Instruct the student to: 1) hold the autoinjector between his/her thumb and index finger (“like a pen”), 2) rest the heel of the hand against the “casualty’s” thigh, 3) push the tip of the injector against the simulated thigh until it “fires”, 4) hold the injector against the simulated thigh for 10 seconds to insure complete discharge of contents.

c. The student will then place the discharged autoinjector immediately into a sharps container.

Intubation/intravenous access – This station is NOT designed to teach students how to intubate or obtain IV access. This station is NOT designed to test or evaluate these skills. By practicing these tasks in MOPP IV, medical personnel already trained to intubate and/or start IVs can build confidence in their ability to perform critical, patient-care skills even in MOPP gear. Encourage the students who know these skills to attempt them while in MOPP IV. Suggest that they first complete the task wearing the heavy, 25 mil gloves and then repeat the task wearing the tactile, 7 mil gloves.

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EMERGENCY MEDICAL TREATMENT
DISCUSSION STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

a. Review proper techniques for litter transport of casualties.
b. Describe and discuss the "dirty EMT" station at a Casualty Decontamination Site including its purpose, personnel requirements, equipment available, and types of casualties seen at the station.
c. A physician instructor facilitates discussion of the assessment, management, and disposition of a single casualty presenting to the EMT station.

2. EQUIPMENT

- 1 litter with safety straps
- 2 litter stands
- Training MOPP and protective mask for mock casualty(s)

3. PERSONNEL

- 1 station instructor (optimally a physician or subject-matter expert)
- 1-2 volunteers from outside class, manikin, or student volunteer from each rotation as a simulated casualty.

4. SET UP

Place the disassembled litter stands, the litter, and safety straps at the center of the station. The casualty in MOPP IV is placed on the ground some distance away from the station (within view and within 50 feet of the station).

5. SAFETY

Ensure that the casualty is safely placed on the litter, safety straps are properly used, the casualty is safely and properly transported, the litter team uses proper lifting techniques and commands, and the litter is safely positioned on litter stands (with the stands inside the litter stirrups). Use these issues as teaching points for Part 1, below.

6. IMPORTANT POINTS

PART 1

This station begins with a litter-casualty transport exercise to emphasize proper technique and difficulties associated with performance in MOPP gear. Ask the group leader to select a litter team to retrieve the casualty and another team to set up the litter stands. As the teams execute these tasks, monitor their performance for safety.

When the tasks are complete (casualty properly positioned on the litter stands in front of the group), ask the group to critique the teams' performance. Briefly discuss the proper technique for litter-casualty transport.

PART 2

Follow the litter-transport exercise with a brief discussion of the dirty EMT station at a Casualty Decontamination Site. Points to emphasize:

What categories of patient would be transported from the triage station to the EMT station? IMMEDIATE casualties requiring resuscitation and stabilization prior to decontamination and/or evacuation. MINIMAL casualties who can be easily treated and returned to duty without definitive decontamination at your Casualty Decon Site.

Who mans the EMT station? One or two medics at echelon I.

What type of treatment is rendered at this station? Simple resuscitative care (i.e. the "A-B-C-D-Ds"): management of Airway and Breathing, control of hemorrhage and replacement of circulating volume (Circulation), administration of antidotal Drugs (MARK I kit, CANA), and spot Decontamination.

What type of equipment is needed at this station? Oropharyngeal airways, ventilatory devices (bag-valve masks, Resuscitation Device, Individual, Chemical [RDIC]), IV therapy supplies (IV fluids, tubing, catheters, etc.), battle dressings, autoinjectors, M291 Skin Decontamination Kits, water, bleach. **Remember that any supplies and equipment prepositioned at this station must be used, decontaminated, or disposed of when operations at this site are completed. Therefore, do not position any durable equipment here that cannot be decontaminated. Do not pre-position 100% of the supplies that may be needed. Resupply from the clean side of the Hotline as necessary during operations.**

PART 3

The third exercise at this station is an instructor-facilitated student discussion of a chemical-casualty treatment scenario. Emphasis should be on a type of casualty that would be treated at the EMT station. Discussion should emphasize resuscitative care to be rendered soon after the exposure. The following is an example of a case scenario often used during the exercises presented at USAMRICD. However, only the imagination and expertise of the station instructor and the time allotted for the station rotation limit the type of casualty to be discussed and the points to be discussed. No moulage is required at this station; e.g., if the casualty would have a dressing, the instructor simply indicates where on the casualty the dressing would be.

Scenario: **The casualty, in MOPP IV, arrives at the EMT station by litter. He is awake and responsive, but is obviously struggling to breathe. He is twitching all over. He retches intermittently. There is a bloody, pressure-dressing on his right thigh. The Field Medical Card reads "MARK I X one". What is your course of action?**

Include the "A-B-C-D's" in your discussion:

AIRWAY/BREATHING – Since the casualty is struggling to breathe and possibly vomiting into the mask, can you effectively manage the airway if necessary? When and how can you manage the airway and ventilation of this casualty in protective mask? Is intubation an option? When and how?

CIRCULATION – The casualty could lose significant blood volume into the thigh from the thigh wound (especially if it is associated with a fractured femur). If students fail to assess circulation and proceed immediately to antidote administration, IM antidotes may not produce effective results due to hypoperfusion in the extremities. In addition, attempting positive-pressure ventilation in the setting of low circulating blood volume may inhibit venous return, exacerbate hypotension, and lead to cardiac arrest. Should an IV be started on this casualty in MOPP gear? When and how?

DRUGS – How many MARK I kits should be administered initially? This is clearly a severe exposure, so giving two or three MARK Is would be justified. Diazepam (CANA) should also be administered. How long must we wait to see an effect from the drugs administered? (5-10 minutes) What therapeutic effects are we seeking from each component of the kit? Atropine – drying of secretions, unlabored breathing. 2 PAM chloride – improved strength of skeletal muscles (most importantly, the diaphragm). Diazepam – prevention or treatment of seizures. Could other routes of drug administration be used? Remember that IV administration of atropine in the setting of hypoxia could produce lethal dysrrhythmias.

DECONTAMINATION – What is the likely state (liquid? vapor?) of the agent? Where on his or her body was this casualty exposed? (Liquid nerve agent on the BDO driven into the thigh wound by the penetrating missile fragment, but look for other possible sites of exposure and absorption). How does liquid exposure (vs. vapor) affect the onset, type and time course of symptoms? Is spot decontamination appropriate here? Should the wound be decontaminated? How?

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LITTER-PATIENT DECONTAMINATION STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

Describe the litter-casualty decontamination station and its processes. Demonstrate and practice the step-by-step procedure for contaminated clothing removal and skin decontamination of a litter casualty.

2. EQUIPMENT

NOTE: If the class is large and two instructors are available, **DOUBLE** the number of each item listed below. This will permit two decon teams to decon two casualties per rotation.

- 2 litters (preferably decontaminable litters) with safety straps
- 2 litter stands
- 4 utility pails (2 labeled "5% hypochlorite" and 2 labeled "0.5% hypochlorite")
- 4 sponges
- 4 large, bandage scissors
- 2 "J" Knives if available (knife - NSN 5110-00-524-6924, replacement blades - NSN 5110-00-098-4326)
- 4 butyl rubber aprons, Toxicological Agent Protective (TAP)
- 5 sets of training MOPP gear that can be cut from volunteer casualties
- large garbage pail with plastic liner

3. PERSONNEL

- 1-2 station instructors familiar with the litter-patient decon process
- 2-4 volunteers or 5-10 manikins to simulate litter casualties

4. SET UP

Four student volunteers from each rotation will perform the functions of the decon team while a fifth student volunteer, a volunteer from outside the class, or a manikin will act as the casualty. If the class is large and two instructors are available, use two decon teams (8 volunteers) to decontaminate two casualties per rotation. In this case, double the set up described below.

Place a litter on litter stands. Hang a pail with a sponge inside on each of the four litter poles. Place a volunteer casualty or a manikin in MOPP IV on the litter. Simulate decon using dry sponges or use water to simulate decon solution. Provide TAP aprons and scissors or "J" knives for 4 volunteers from each rotation.

If manikins are used, dress all of them in MOPP IV before the FTX begins, as time is not available between rotations. If two volunteers are used as casualties, one volunteer will act as the casualty while the other suits up for the next rotation.

5. SAFETY

Use a minimum of three persons to lift the casualty from the litter. Ensure that the largest/strongest person is positioned at the casualty's head/shoulders for the lift. Do not use large individuals (>90kg) as volunteer casualties.

Instruct casualties to wear a PT uniform rather than BDU under the BDO (to reduce heat stress and in case a student inadvertently cuts an extra layer of clothing when removing the BDO).

The "J" Knife, originally designed to cut seat belts during vehicle extrication, contains two razor blades and can produce serious injury if used carelessly or improperly. Instruct students to take special care when cutting the BDO with knife or scissors to avoid cutting underlying garments or the casualty.

Student-volunteers who don a TAP apron will rehydrate before proceeding to the next rotation.

6. IMPORTANT POINTS

Location of the litter-casualty decon station: upwind of triage and EMT, downwind of the hotline. Type of casualty brought to this station: CLINICALLY STABLE litter-borne casualty. Patients should be medically managed at the EMT station until they are stable enough to undergo the 10-20 minute decon process.

The decon process may be managed as an "assembly line" with a separate station (and team) for clothing removal, skin decon, and confirmation of decon completeness. A simpler and more efficient technique is the "patient centered" approach. A decon team of four retrieves the patient from the triage or EMT station; completes clothing removal, litter exchange and skin decon at their station; then moves the patient to the hotline for confirmation of decon completeness and a second litter exchange in the shuffle pit.

Talk the decon volunteers through each step of the clothing removal and skin decon process. The steps of this process are detailed in the "Litter Casualty Decontamination" section of the Field Management of Chemical Casualties Handbook and in Appendix A of the Medical Management of Chemical Casualties Handbook.

During actual decon operations only 0.5% bleach solution or plain water should be used on skin. A 5% solution may be used for equipment such as the mask. Spot decon the BDO and remove personal items from pockets before cutting. Decon scissors after each complete cut (e.g. a sleeve, a trouser leg, front of jacket). Decon

gloves in 0.5% before touching patient's skin. Decon front of the TAP apron before removing the next layer of clothing.

In most cases, the majority of contamination is removed when the clothing is removed. Skin decontamination can be accomplished by spot decon of critical areas (connection points of the ensemble – neck, wrists, waist, ankles; and warm, moist, sensitive skin – axillae and groin). This procedure is appropriate when a dry technique, like the M291 kit, is used. However, a full-body wash with water, soapy water, or dilute bleach is nearly as quick and more effective.

The most effective technique for skin decontamination is a soap and warm-water wash with friction, followed by a fresh water rinse. This technique may be accomplished even in the field if a shower can be set up using a system such as the M17 Lightweight Decontamination System (LDS).

The Field Medical Card is placed in a zip-lock plastic bag, which is then decontaminated with 0.5% bleach and placed in the head harness of the patient's mask. Personal items are also placed in a zip-lock bag along with identifying information. The inside of this decontaminated bag is checked with a CAM at the hotline. Dressings are removed along with clothing. Wounds are redressed only if bleeding. Tourniquets are removed after a clean tourniquet is placed proximal to the one being removed. Splints are left in place and soaked with decon solution. Airway management and IV therapy devices are decontaminated and left in place.

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AMBULATORY-PATIENT DECONTAMINATION STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

Demonstrate/practice the step-by-step process for removal of contaminated clothing and decontamination of ambulatory casualties.

2. EQUIPMENT

- 2 litter stands
- 6 utility pails
- 6 sponges
- 3 large, bandage scissors
- 1-3 "J" Knives, if available (knife - NSN 5110-00-524-6924, replacement blades - NSN 5110-00-098-4326)
- 3 butyl rubber aprons, Toxicological Agent Protective (TAP)
- 6 sets of training MOPP gear to be cut from volunteer casualties (optional)
- M291 Skin Decontamination Kit
- Small "zip-lock" plastic bag
- 1 large garbage pail with plastic liner
- 1 cravat (triangular bandage) for arm splint on volunteer casualty
- 2 Field Medical Cards
- talc powder (Talc, Technical NSN 6810-00-142-9849) or engineer tape (NSN 8315-00-255-7662)

3. PERSONNEL

- 1 or 2 station instructors
- 2 volunteers to simulate casualties. Alternatively, volunteers may be selected from the students in each rotation or all of the students in the rotation can be paired into casualty / operator teams.

4. SET UP

The lane may be set up as a three-step process: Step 1. Mask / hood decon and hood removal. Draw a simulated shuffle pit using talc or engineer tape. Place 2 buckets with scissors and sponge at this area. Step 2. Clothing removal. Place one or two litter stands here so casualty has something to brace against while overboots and trousers are being removed. Place garbage pail with liner here for removed clothing. Place 2 buckets, scissors and sponges here as well. Step 3. Spot decon and monitoring. Place 2 buckets, scissors, sponges, M291 kit, CAM and M8 paper at this area.

If volunteers from outside the class are used, they can take turns donning training MOPP to act as an ambulatory casualty for each rotation.

5. SAFETY

The “J” Knife contains two razor blades and can produce serious injury if carelessly or improperly used. Instruct students to take special care when cutting the BDO with knife or scissors to avoid cutting underlying garments or the casualty.

Volunteers wearing a TAP apron will rehydrate before the next rotation.

6. IMPORTANT POINTS

Options for demonstrating the ambulatory decon process: 1. A volunteer from outside the class dons expendable, training MOPP for each rotation. One to three student volunteers from each rotation (one for each step or one who completes the entire process) don a TAP apron and execute the process as instructor describes the steps. The BDO is cut as necessary. 2. Use a student from each rotation as the casualty, remove the MOPP without cutting and ask the volunteer to re-don their BDO at the end of the rotation. 3. Pair up all the students in each rotation. One student of each pair acts as the casualty, the other student becomes the operator.

Volunteers complete each step as the instructor describes the clothing removal and decon process. The steps of this process are detailed in the "Ambulatory Casualty Decontamination" section of the Field Management of Chemical Casualties Handbook and in Appendix A, Medical Management of Chemical Casualties Handbook. Place a splint on one casualty to demonstrate the added complexity created by medical devices.

Emphasize the following points:

- The majority of the casualties will likely be ambulatory. These casualties normally retain (and cross the hotline in) their BDU and combat boots since uniform resupply for so many casualties would be impractical. However, the decon team and OIC may decide to remove all clothing from some or all of these casualties to prevent contamination of the medical treatment facility.
- During actual decon operations only 0.5% bleach solution or plain water should be used on skin. A 5% solution may be used for equipment such as the mask.
- In some cases the casualties can assist each other with the decon process.
- Ambulatory decon may be set up as a lane requiring the casualty to advance to a separate station for each step, or all steps may be performed in one spot.
- The Field Medical Card is placed in a zip-lock plastic bag, which is then decontaminated with 0.5% bleach and placed in the head harness of the patient’s mask. Data is transcribed at the hotline. Personal items are also placed in a zip-lock bag along with identifying information. The inside of this decontaminated bag is checked with a CAM at the hotline. Dressings are removed along with clothing. Wounds are redressed only if bleeding. Tourniquets are removed after a clean tourniquet is placed proximal to the one being removed. Splints are left in place and soaked with decon solution. Airway management and IV therapy devices are decontaminated and left in place.

HOTLINE STATION INSTRUCTOR'S GUIDE

1. OBJECTIVE

Familiarize students with actions performed at the hotline and equipment used at or near the hotline.

2. EQUIPMENT

- 2 litters and 2 litter stands for the shuffle pit
- Field table or a litter on 2 litter stands to display equipment
- Talc powder or 1 roll of engineer tape to mark hotline and shuffle pits
- M8 Chemical Agent Detector Paper, 1 book for each student in the rotation if possible
- M8A1 and/or M22 Automatic Chemical Agent Detection Alarm (ACADA)
- Chemical Agent Monitor (CAM) or Improved Chemical Agent Monitor (ICAM)

3. PERSONNEL

This station should be managed by at least two persons to allow one instructor to rest during each rotation or to allow each rotation of students to be subdivided for more effective teaching (see Important Points section below).

Instructors familiar with the proper use of the equipment listed above should present this station (e.g. Chemical NCO, 54B).

4. SET UP

Draw a simulated hotline using talc powder or engineer tape. Simulate two shuffle pits (one for litter patients, one for ambulatory patients) using powder or tape. The litter-patient shuffle pit should be large enough to allow someone to walk around a litter while remaining inside the pit. Display equipment on a table or a litter. For large groups it may be more effective for one instructor to discuss the hotline with half of the students in each rotation while the other instructor demonstrates the equipment for the other half of the students. Students would switch instructors after 10 minutes.

5. SAFETY

When demonstrating the litter exchange step at the shuffle pit, use a minimum of three persons to lift the casualty from the litter. Ensure that the largest/strongest person is positioned at the casualty's head/shoulders for the lift. Do not use large individuals (>90kg) as volunteer casualties.

Simulants are sometimes used to demonstrate the color change of M8 Paper. For safety, simulants will not be used during the FTX at USAMRICD. If simulants are used, keep them away from students and follow the manufacturers' guidelines.

6. IMPORTANT POINTS

Hotline – The hotline separates the downwind decon area, potentially contaminated by liquid agent, from the clean, upwind area. Thirty to sixty meters upwind of the hotline is the vapor control line (VCL). This “buffer zone” between the hotline and VCL is used to protect occupants of the medical treatment facility (MTF) from potential vapor exposure. The MTF is just upwind of the VCL. Casualties and operators moving between the hotline and VCL must wear a protective mask.

Actions at the hotline –

1. Litter Exchange: Four students in MOPP IV with TAP apron act as the decon team. Two students in protective mask act as the receiving team on the clean side. One student in protective mask acts as the casualty. Walk these volunteers through the steps of litter exchange in the shuffle pit.

2. Transcribe the Field Medical Card: As part of the above process, have the decon team hold up the casualty’s Field Medical Card (inside a sealed plastic bag) while the clean-side team transcribes the information onto a new FMC.

3. Confirm the completeness of decon: Discuss advantages and disadvantages of the various techniques. The CAM may be kept on the clean side and used by the clean-side team at the shuffle pit. Because the CAM detects vapor rather than liquid, requires from 10 to 15 seconds to indicate detected agent, and detects relatively gross amounts of agent, it may not be the optimal technique. M8 paper may be used on critical areas of the body to sample for residual liquid agent. The fact that a thorough decon process has been completed may be confirmation enough.

Shuffle pits – The shuffle pits are designed to prevent the transfer of liquid contamination across the hotline on the boots of the operators or casualties. Make one pit for litter casualties and one for ambulatory casualties. The pit for litter casualties should be long enough and wide enough to allow team members to walk around a litter while inside the pit. The shallow pits are filled with a mixture of 2 parts Super Tropical Bleach (STB) and 3 parts earth from the pit.

At the vapor control line – The casualty’s mask is removed and his/her face is decontaminated if necessary. The operators may also remove their mask. The casualty’s mask is processed for reissue (thorough decon, new filter and new hood). The M8A1 or M22 monitor should be placed at the VCL to warn medical staff of the presence of chemical agent vapor.

Litters – To avoid cross contamination, groups of litters remain in four separate areas and are circulated only within that area: one group circulates between arriving ambulance and decon lane, another group between decon lane and hotline, the third group between the hotline and medical treatment facility, and the last group between

the MTF and the ambulance departing for higher echelon. Litters are decontaminated between each casualty.

M8 Detector Paper – Discuss the purpose and proper use of M8 Paper. Indicate possible false positives. Refer students to the color chart on the inside front cover of the M8 Paper book for the color change expected with each agent. Remind students that M8 Paper identifies only liquid hazards. Simulants are sometimes used to demonstrate the characteristic color change that occurs when M8 paper comes in contact with a possible nerve agent or vesicant. For safety, simulants are not used during the FTX at USAMRICD.

M8A1 or M22 Alarm – Discuss the purpose, the setup, and the proper use of system components. Indicate that the M8A1 detects only nerve agent vapor, whereas the M22 detects both nerve agent and vesicant vapor. Discuss possible false positives. Demonstrate the sound of the alarm.

Chemical Agent Monitor – Discuss the purpose of the CAM and the agents it can identify. Indicate that the CAM detects only vapor and not liquid hazards. Demonstrate the basic steps required to prepare the CAM for operation. Demonstrate the basic operation of the CAM. Discuss possible false positives and typical problems with operator technique (e.g. interference from upwind vapors, scanning too quickly over the area to be sampled, saturating the detection cell, and contaminating the nozzle with liquid).

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MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX B

STUDENT GUIDE TO THE FIELD TRAINING EXERCISE

STUDENT GUIDE TO THE FIELD TRAINING EXERCISE

The goals of this exercise are: 1) to familiarize course attendees with personal protective equipment, its capabilities and limitations, and some of the challenges associated with casualty care in a contaminated environment and 2) to demonstrate the processes required to manage contaminated casualties.

Uniform of the day will consist of Battle Dress Uniform (BDU or Utilities) for cold weather or Physical Training Uniform for hot weather, protective mask with hood, Battle Dress Overgarment (BDO), overboots, butyl rubber gloves with inserts, canteen, and web belt.

The field training exercise (FTX) consists of six teaching stations: the casualty assessment exercise, the emergency-medical-treatment (EMT) tasks station, the EMT discussion station, the litter-casualty decontamination station, the ambulatory-casualty decontamination station, and the hotline station.

As with any FTX, the first rule is safety. You will be in protective clothing during much of the exercise. The potential for heat injury exists. Bring a full canteen to the FTX site. You will be encouraged to drink water. If you start to feel light-headed, nauseated, weak, etc., notify your squad leader or the nearest instructor. Remove your mask, gloves, and BDO jacket, and sit down in the shade. Each squad leader should ensure that each member of his or her squad maintains adequate hydration.

MOPP DONNING DRILL

Before the FTX begins you will be given a short safety briefing. The briefing will be followed by a MOPP donning drill. You will be given eight (8) minutes to get into MOPP IV. There will be classroom instruction and practical exercises on MOPP donning prior to the FTX. It is very important that your mask fits properly. If it does not, your eyepieces may fog and you will be unable to see. If you have problems donning the protective gear, ask one the instructors for help prior to the FTX.

The remainder of the FTX consists of six 20-30 minute stations. The FTX NCOIC will time the modules and announce rotations with a bullhorn or by blowing a whistle. Direct any questions you may have during the FTX to the individual station instructors.

STATION I, Casualty Assessment:

This station may be completed as a separate exercise using volunteers from the class as simulated casualties. In this case, the instructor will call for volunteers on the day before the FTX. Volunteers will be issued a scenario and a script to practice and reenact for the rest of the class.

There will be twelve simulated casualties at the station. You will be given two minutes to assess each casualty. The station instructor will announce rotation times.

You may obtain information about the casualty in three ways: 1) by reading the field medical card (FMC), 2) by taking a history (each casualty has a story, but the casualties are instructed not to offer information unless you ask), and 3) by observing the casualty's behavior and wounds. Remember, however, that none of the casualties are professional actors. The moulage is present only to prompt inquiry and is not designed to be a realistic representation of the casualty's wounds.

A note-taking outline will be issued at the start of the exercise to help you organize your assessment of the casualty. It may not be possible to complete the entire form for each casualty during the two-minute evaluation period. Make enough notes to help you remember the casualty and keep your notes for reference during the discussion that follows the exercise.

STATION II, Emergency Medical Treatment - Tasks:

You will be given the opportunity to accomplish, while in MOPP IV, a series of medically related tasks that may be required at the EMT station:

1. **IV administration -** Start an IV on a manikin.

2. **Endotracheal intubation** - Intubate a manikin.

3. **Nerve Agent Antidote Kit (MARK I)** - Practice injection of a live (expired) or trainer autoinjector on a manikin. WARNING: Pay close attention to the station instructor. Live autoinjectors contain a spring-loaded needle!

4. **M291 Skin Decontamination Kit –** Practice personal decontamination.

NOTE: This station is not designed to teach you how to perform tasks 1 and 2, rather give you confidence in your ability to accomplish tasks requiring fine-motor skill and coordination while wearing protective equipment. Non-clinicians may choose to complete only task 3 and 4 or may attempt the other tasks, with instruction, if time permits.

STATION III, Emergency Medical Treatment - Discussion:

At this station, the instructor will present a typical casualty scenario and facilitate a group discussion of that casualty's emergency management. The instructor will also discuss the role of the dirty EMT station at a Patient Decontamination Site and you will practice litter-carry in MOPP IV.

STATION IV, Litter-Casualty Decontamination:

Decontamination of a litter casualty will be discussed and demonstrated. You may be asked to perform this task with the instructor's guidance.

STATION V, Ambulatory-Casualty Decontamination:

Decontamination of an ambulatory casualty will be discussed and demonstrated. You may be asked to perform this task with the instructor's guidance.

STATION VI, Hotline Station:

The purpose and location of the hotline will be discussed. Processes completed at the hotline will be discussed and practiced. Detection equipment used at or near the hotline, including M8 Chemical Agent Detector Paper, the Chemical Agent Monitor (CAM), M8A1 Automatic Chemical Agent Alarm (ACAA) and/or M22 Automatic Chemical Agent Detection Alarm (ACADA) will be demonstrated.

MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX C

EQUIPMENT LIST

EQUIPMENT LIST

NOTE: Quantities are given as minimal-to-optimal numbers. See the "Equipment" section of each Station Instructor Guide to determine how the following equipment will be distributed and used.

- Training MOPP gear (protective mask, BDO jacket, BDO trousers, gloves, overboots) – one set for each student in the course
- 12 sets of MOPP gear for volunteer casualties if volunteers are taken from outside the class. Five to ten of these sets to be cuff off during the litter and ambulatory casualty decon demonstration if possible.
- Canteen and web belt for each student and each casualty
- 6-24 litters, decontaminable litters if available
- 4 litter straps (two pair)
- 8-12 litter stands (four to six pair)
- 4-12 butyl rubber aprons, Toxicological Agent Protective (TAP)
- 4-12 utility pails
- 4-12 cellulose sponges for litter decon demonstration
- 4-12 large bandage scissors
- 2-4 "J" knives if possible – knife NSN 5110-00-524-6924, replacement blades NSN 5110-00-098-4326
- 2 rolls of M9 Chemical Agent Detector Tape
- 1 book of M8 Chemical Agent Detector Paper – one book per student if possible
- M291 Skin Decontamination Kits – one kit for each student
- One M8A1 and/or M22 Automatic Chemical Agent Alarm system
- 1 Chemical agent Monitor (CAM) or Improved Chemical Agent Monitor (ICAM)
- 12-24 blank, Field Medical Cards, DD Form 1360, December 1991
- Moulage supplies: field dressing x 3-6, cravat x 3-6, splint x 1-2, blood simulant ("Karo" syrup with red food coloring added), red greasepaint or rouge, red marking pen to add spots to M9 tape
- Sharpened pencils, one for each student in a rotation
- Stopwatch or wristwatch with a second hand
- Bullhorn, whistle or other signaling device to signal station rotations (optional)
- Triage-Casualty Scripts (Appendix G)
- Note-taking Outline (Appendix H) – enough copies for each student to record data on each of the twelve assessment exercise casualties (3, two-sided copies per student)
- 3 Field Tables (optional)
- 1 sharps container (two containers if live autoinjectors are used)
- 1-3 large garbage pails with plastic liner

Autoinjectors – If trainers are used, supply one MARK I Kit (trainer) for each student in a rotation. Trainers must be reset after they are "discharged". The reset device is a small, black-plastic ring supplied with the trainer kits. If live (expired) MARK I Kits are used, provide one MARK I Kit for every two students in the FTX.

- 1 pair BDO trousers, rolled up, or covering a sandbag to simulate a casualty's thigh (if live autoinjectors are used)

Intubation equipment – One or more intubation manikins. If more than one manikin is used, increase the numbers of the following items accordingly.

- 1 laryngoscope with functioning batteries
- 2 laryngoscope blades with functioning lamps (one Miller #2 or #3, one MacIntosh #3 or #4)
- 1 endotracheal tube, size 8.0 ID with functioning cuff
- 1 syringe, 10cc to inflate cuff
- 1 stylet
- Silicone spray to lubricate endotracheal tube (optional) (do not use KY® jelly or ointment as lubricant)
- 1 bag-valve-mask. Use the Resuscitation Device, Individual, Chemical (RDIC) if available.

Intravenous access equipment – One or more IV manikins (arm). If more than one manikin is used, increase the numbers of the following items accordingly.

- Intravenous catheters, 18 or 20 gauge, quantity sufficient to allow each student one or two insertion attempts
- 1 liter, 0.9% saline solution (do not use glucose-containing solutions in manikin)
- 1 liter, 0.9% saline solution with red food coloring added (blood simulant to fill veins of manikin)
- 2 IV tubing sets
- Alcohol prep pads, tape, tourniquet (optional) to add realism
- Several pair of 7 mil, tactile, protective gloves
- Trash receptacle

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MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX D

SAFETY
STANDARD OPERATING PROCEDURES

MCMR-UV-ZM 8 June, 1998

I. Title: Emergency Medical Service Standard Operating Procedures (SOP).

II. Purpose: To establish a Standard Operating Procedure in case of an environmental or traumatic emergency situation during a Field Training Exercise (FTX) in support of the Medical Management of Chemical and Biological Casualty Care Course (MCBC) and Field Management of Chemical and Biological Casualty Care Course (FCBC). This SOP will be used to facilitate emergency medical service for students or staff along with establishing guidelines to follow during a field training exercise.

III. Applicability: This SOP applies to all personnel participating in the MCBC and FCBC Course as instructors or as personnel providing administrative/logistical/medical support.

IV. Definitions:

A. MOPP: Mission-Oriented Protective Posture, the term used to refer to the wearing of various combinations of chemical protective clothing and the chemical protective mask.

1. MOPP 1: Wear of the chemical protective overgarment, with mask slung at side and in its carrier.

2. MOPP 2: Wear of the chemical protective overgarment (with mask slung at side and in its carrier) and the chemical protective boots.

3. MOPP 3: Wear of the chemical protective overgarment, boots, and mask (mask is on face).

4. MOPP 4: Wear of the chemical protective overgarment, boots, mask, and gloves.

B. WBGT: Wet Bulb Globe Temperature, a means for determining a heat stress index called the Wet Bulb Globe Temperature Index (also WBGT), which takes into account the contributions to heat stress from ambient air temperature, humidity, air movement, and radiant heat.

1. For outdoor environments with a solar heat source,
WBGT = 0.7 NWB + 0.2 GT + 0.1 TA, where
NWB is the temperature of the natural wet bulb,
GT is the temperature of the black globe, and
TA is the temperature of the dry bulb.

2. For indoor environments (and for outdoor environments without a solar heat source),
WBGT = 0.7 NWB + 0.3 GT.

3. Either the WBGT Kit (NSN 6665-01-109-3246) or the WGT Kit (“Botsball”; NSN 6665-01-103-8547) will be used, but the WBGT calculation when using the WGT Botsball will be WBGT = 0.8 WGT + 0.2 DB, where
WGT is the WGT reading directly from the WGT Botsball and
DB is the dry-bulb temperature, obtained by removing the dial thermometer from the WGT Botsball, keeping the thermometer in the shade for 3 minutes, and then reading the air temperature from the dial thermometer (see Message SGPS-PSP, 23 May 1990; and Appendix B [Work-rest and Water Consumption Tables] of USARIEM Technical Note 91-2).

4. WBGT measurements are to be made at a point 4 feet above ground level.

V. Responsibilities:

A. The Course Director (normally Chief, Chemical Casualty Care Division) has the overall responsibility for the MCBC and FCBC and is responsible for the enforcement of this SOP during the Field Training Exercise and for ensuring that

1. The Edgewood Area Health Clinic and Edgewood Emergency Medical Services are aware of the dates for the field training exercise (FTX) for the FCBC and MCBC.

2. The planning of each course includes assurance that FTX stations will be arranged in such a manner to ensure that all FTX participants will have the recurring opportunity to remove their masks and achieve adequate hydration.

3. A medical monitor responsible for the medical supervision of the FTX is present at all times during the FTX.

4. At least one medic or physician responder, with aid bag, is at each FTX.

5. The chain of command is notified at the earliest opportunity of any injuries that occurred during the FCBC and MCBC.

B. The NCOIC of the Chemical Casualty Care Division or a designated representative is in charge of the FTX during the MCBC and FCBC and is responsible for ensuring that

1. A cellular phone is maintained at the FTX to be utilized in the event of an emergency.

2. All FTX participants receive instruction concerning safety issues (including heat-stress issues, work-rest cycles, procedures for adequate hydration, and methods for indicating true medical distress) and have the opportunity to ask questions and clarify safety instructions.

3. All FTX participants have the opportunity to report in a confidential manner to the Course Director any medical conditions (including pregnancy) that may preclude full participation in the FTX.

4. All FTX participants are briefed to communicate according to a standard signal all injuries or other relevant medical problems during the FTX.

5. All FTX participants have full canteens at the beginning of each FTX.

6. MOPP wear times, work-rest cycles, and hydration requirements indicated by WBGT considerations are observed by all participants.

7. All medical emergencies are reported to the Course Director.

C. The designated medical monitor on site during an FTX will be responsible for

1. Measuring and recording the Wet Bulb Globe Temperature at least every 25 minutes during the FTX.

2. Ensuring that WBGT-dictated work-time information is communicated to FTX station leaders as indicated.

3. Observing course attendees and casualties for evidence of traumatic injury, heat or cold injury, undue fatigue, and other medically relevant conditions.

4. Notifying an MRICD medic or physician responder in the event that a course participant or casualty is in need of medical attention.

5. Reporting all medical emergencies to the NCOIC of the Chemical Casualty Care Division.

D. The responding MRICD medic or physician during an FTX will be responsible for

1. Remaining with the patient until EMS personnel respond on site.

2. Reporting to the medical monitor that a medical emergency has occurred.

3. As medically indicated, accompanying the patient to the Edgewood Clinic to assist and provide background information to the medical officer on duty at the clinic.

4. As medically indicated, remaining with the patient until the individual is medically released by the Edgewood Clinic medical officer or transported to a Harford County hospital.

5. Establishing at least telephonic contact with the Edgewood Health Clinic to determine disposition of the patient and to provide the clinic with a telephonic point of contact at USAMRICD.

6. Establishing telephonic contact with hospital emergency-room staff when a patient is transported off the installation, and providing the hospital with a telephonic point of contact at USAMRICD.

E. NCO/Officers in charge of individual stations at the FTX (FOX station, Patient Discussion, NBC, Decon, Triage, IV, Intubation, Blood Pressure, etc. will ensure that

1. As indicated by course design [see V. A. 2.], participants at the appropriate stations will remove their masks, drink water according to the guidelines in Appendix B (Work-rest and Water Consumption Tables) of USARIEM Technical Note 91-2, and refill their canteens before proceeding to the next station.

2. In the case of a medical emergency, appropriate care is begun in the most expeditious manner possible and that the medical monitor is apprised of the situation.

VI. Materiel/Equipment to be used:

A. Personal equipment for FTX participants.

1. MOPP gear, masks, and carriers.

2. Load-bearing-equipment (LBE)/pistol belt with water-filled canteens.

3. M9 paper for application to outside of MOPP gear.

B. FTX equipment.

1. Station-specific equipment (e.g., intubation mannequins, IV lines and poles, sandbags, Mark I kits).

2. Timer(s) for timing rotations

3. Litters with straps.

4. Moulage chest with moulage equipment, to include false-positive indicator (e.g., DEET) for M9 paper.

C. Medical/communication equipment.

1. Cellular phone.

2. Copy of Appendix B of USARIEM Technical Note 91-2.

3. At each no-mask station, opened containers of water for use by course attendees and station leaders.

4. At the triage circle, an opened container of water with an adequate supply of paper cups.

5. Aid bag containing at a minimum
   a. Sphygmomanometer with stethoscope.
   b. Epinephrine autoinjector (e.g., EpiPen).
   c. Field dressings, including pressure bandages.
   d. Airway-management equipment:
      (1) 80- and 90-mm oropharyngeal airways.
      (2) Tongue blades.
      (3) Complete bag-valve-mask.

6. Identification material for medical monitor and medic or physician responder(s).

7. Signaling equipment as appropriate to report medical emergencies.

8. WBGT [see IV. B. 3.] and table.

VII. Hazards involved:

A. The primary hazard during the MCBC or FCBC FTX is heat injury from the heat stress associated with the wear of MOPP gear with or without the mask and associated with exertion during the exercise. The work intensity of activities performed in MOPP during the MCBC FTX by course attendees is not expected to exceed the “light” category in Table B-1 (Work Intensities of Military Tasks) of Appendix B (Work-rest and Water Consumption Tables) of USARIEM Technical Note 91-2, and the intensity of activities during the FCBC FTX by course attendees is not expected to exceed the “moderate” category in Table B-1 of USARIEM Technical Note 91-2. In neither the MCBC FTX nor the FCBC FTX is the work intensity of actors simulating casualties expected to exceed the “moderate” category in Table B-1 of USARIEM Technical Note 91-2. The protective-clothing status of all course participants will be assumed to fall into the category “BDO over DBDU” in Appendix B of USARIEM Technical Note 91-2.

1. To ensure a proper preventive posture relative to heat stress, the guidelines found in the work-rest and tables in Appendix B of USARIEM Technical Note 91-2 will be followed. For course attendees, the arrangement of FTX stations that include mask removal and hydration is such that at no point will the recommended maximal continuous work time for soldiers wearing BDO over DBDU and performing light work be exceeded. For actors simulating casualties, the arrangement of rest cycles for the actors will be such that at no time will the recommended maximal continuous work time for soldiers wearing BDO of DBDU and performing moderate work be exceeded.

2. To ensure maximal hydration, course attendees at each station where the mask is to be removed will be instructed to drink in accordance with the guidelines in Appendix B (Work-

rest and Water Consumption Tables) of USARIEM Technical Note 91-2 and to refill the canteen before proceeding to the next station.

B. Potential but unlikely hazards of the FTX include skin exposure to M9 paper, which contains the mutagenic dye B-1. The risk of cold injury in MOPP is low. The risk of inhalational or skin exposure to insect repellant or other false-positive M9 indicators during the FTX is judged to be remote.

VIII. Safety Requirements:

A. All FTX participants will be briefed on the following before participating in the FTX of the MCBC or FCBC:

1. Proper wear (including donning and removal) of chemical-protective clothing and the chemical-protective mask.
2. Signs and symptoms of heat and cold injury and of dehydration.
3. Preventive measures instituted concerning heat/cold injury and dehydration.
4. Actions to be taken (including use of a standard distress signal and the identity of the medical monitor and of assigned medical responder[s]) in case of a medical emergency.

B. Monitoring will be conducted by the medical monitor in accordance with Sections IV. B. and V. C. of this SOP.

C. Emergency equipment will be constituted in accordance with Section VI. C. of this SOP.

D. Special Precautions: Contractors or volunteers supporting the FTX are to read this SOP, indicate by their signatures their understanding of its contents, and be prepared to report to the medical monitor at the FTX any untoward medical events involving themselves or personnel under their supervision.

IX. **Procedures**: The FTX is to be conducted according to the specific guidelines in the FTX packets available from the Chemical Casualty Care Division.

X. Emergency First Aid Treatment:

A. FTX participants with minor injuries or minor medical problems and judged by the medical responder to require further medical care will be transported by the safest and most expeditious means (litter, ambulance, other vehicle) to the Edgewood Area Occupational Health Clinic (Bldg. E-4110). FTX participants with severe injuries or illnesses will be treated on site until the arrival of an ambulance for transport to the Edgewood Area Occupational Health Clinic or to another medical facility as appropriate. In the case of serious injury or illness, the medical monitor is to use his or her cellular phone to dial 911 to report the emergency and request assistance.

B. All injuries and illnesses will be reported to the on-site medical monitor regardless of the degree of injury. The medical monitor in turn will report the situation to the NCOIC of the FTX, who has the responsibility of notifying the Course Director. The Course Director will be responsible for the timely submission (within one working day) to the MRICD Safety Office of an accident report (STE Form 1416, “Record of Injury”) in applicable cases and of timely notification of the Office of the Commander at USAMRICD of all serious injuries or illnesses occurring in association with the FTX.

C. Emergency Numbers

Chemical Casualty Care Office (Bldg. E-3106)	410-436-2230
Training Site Warehouse (Bldg. E-3083)	
Hoyle Gymnasium (Bldg. E-4210)	410-436-3375
Edgewood Medical Clinic (Bldg. E-4410)	410-436-3001
Military Police	410-436-2222/2125
Hazardous Waste (Bldg. E-4430)	410-436-3320/4429
Hospitals:	
Harford Memorial Hospital	410-939-2400
Fallston General Hospital	410-879-0500/877-3700
Walter Reed Army Medical Center	202-576-3501 [DSN 291]

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MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX E

PROTECTIVE MASK / RESPIRATOR MEDICAL CLEARANCE FORM

PROTECTIVE MASK/RESPIRATOR MEDICAL CLEARANCE FORM

Purpose: To identify those individuals who may have medical conditions or past mask/respirator experiences that could preclude use of a mask or respirator in a training environment.

Part I (to be completed by the prospective student):

1. **Name**: _____
   Last First Middle initial

2. **Signature**: _____

3. **SSN**: _____ **Age**: _____ **Sex**: _____ **Date**: _____

4. **Respirator history** [please circle **Yes** or **No** for each question]:

   a. Have you ever worn a protective mask or a respirator? **Yes** **No**

   b. When wearing a mask, have you ever had problems such as panic, shortness of breath, or excessive heat? **Yes** **No**

   c. Have you ever had difficulty wearing any type of chemical protective clothing or protective eye wear? **Yes** **No**

5. **Medical history** [please circle **Yes** or **No** for each question]:

   a. Are you now or have you ever been under a doctor's care for heart or lung problems? **Yes** **No**

   b. Have you ever had chest pain or severe shortness of breath during brisk walking or during other exercise? **Yes** **No**

   c. Do you experience shortness of breath or wheezing in cold weather? **Yes** **No**

   d. Do you now take or have you ever taken medications for heart or lung problems or for high blood pressure? **Yes** **No**

   e. Have you ever been treated by a doctor for asthma, angina (chest pain), diabetes, high blood pressure, or irregular heartbeat? [if yes, please circle all appropriate conditions] **Yes** **No**

   f. Have you had a heart attack within the last year? **Yes** **No**

   g. Have you been treated for heat exhaustion or heat stroke in the last year? **Yes** **No**

   h. Have you ever experience claustrophobia (a panic attack or a sensation of being smothered) while in a tight place such as a tunnel or an elevator or while in crowds? **Yes** **No**

   i. Do you ever hyperventilate to the point of feeling faint or passing out during exercise or in stressful situations? **Yes** **No**

   j. Do you wear glasses or contact lenses? **Yes** **No**

   k. Do you have any medical problems or physical limitations that might prevent or delay your donning a protective mask in an emergency? **Yes** **No**

PROTECTIVE MASK/RESPIRATOR MEDICAL CLEARANCE FORM

Part II (to be completed by the health-care provider):

1. **Blood pressure**:

   a. Blood pressure (supine / sitting / standing) [please circle one]: _____ / _____ mm Hg

   Additional measurements as indicated
   [please specify position, body site (e.g., left arm), and circumstances]: _____ / _____ mm Hg

   _____ / _____ mm Hg

   _____ / _____ mm Hg

   b. Is the diastolic blood pressure less than 100 mm Hg? **Yes** **No**

2. **Additional findings:** Additional relevant findings from history or physical examination:

   _____

   _____

   _____

   _____

3. **Additional testing needed**: Based upon my review of the preceding information and my evaluation of this prospective student, it is my professional opinion that her or she **does** / **does not** [please circle one] require further medical evaluation.

   Further testing recommended: _____

   _____

   _____

   _____

4. **Respiratory clearance**:

   The prospective student whose name appears on page 1 of this form **is** / **is not** [please circle one] cleared for the issue of a negative-pressure military chemical protective mask for training purposes only.

   Name of approving physician: _____

   Physician signature: _____

   Date: _____

   Location (city and state): _____

PROTECTIVE MASK/RESPIRATOR MEDICAL CLEARANCE FORM

Note: The original of this medical screening-and-evaluation form shall be provided to the Chemical Casualty Care Division, USAMRICD, APG-EA, Maryland. Medical clearance is for the use of a negative-pressure military chemical protective mask for training purposes only and shall be effective for up to but not longer than one (1) year from the approval date indicated in section 4 of Part II of this form.

Privacy Act Statement:

Authority: 5 U.S.C., Section 301; 10 U.S.C., Section 3013

Purpose: This form is used to record student information in a form accessible to personnel entrusted with the safety of the training of students in chemical casualty care; information provided shall be made available only to a military physician assigned or attached to the Chemical Casualty Care Division, USAMRICD, APG-EA, MD and only for purposes of determining eligibility for field training involving a military chemical protective mask.

Disclosure: Personal information on this form is given on a voluntary basis. However, failure to provide this information may preclude participation in the Medical Management of Chemical and Biological Casualties Course (MCBC) or the Field Management of Chemical and Biological Casualties Course (FCBC).

MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX F

GENERAL INSTRUCTIONS
WET BULB-GLOBE TEMPERATURE KIT

GENERAL INSTRUCTIONS
WET BULB-GLOBE TEMPERATURE KIT NSN 6665-00-159-2218

A. The wet bulb-globe temperature kit is an instrument for providing information on hot weather risks to the health of troops undergoing training. The information is displayed on a scale in the form of an index, computed from the weighed readings obtained from three different thermometers.

1. A stationary wet bulb (WB) thermometer exposed to the sun and prevailing wind.

2. A similarly exposed “black globe” (BG) thermometer with a black sheath over the bulb. The sheath and bulb are inside a transparent perforated plastic shield.

3. A dry bulb (DB) thermometer with its bulb shielded from the direct rays of the sun by a shield painted white.

B. The wet bulb-globe temperature index (WBGT Index) is equal to 70% of the wet bulb (WB) temperature reading plus 20% of the black globe (BG) temperature reading plus 10% of the dry bulb (DB) temperature reading and can be computed as follows:

WBGT Index = 0.7 WB + O.2 BG + 0.1DB

Use of the attached slide rule provides the correct WBGT Index automatically.

C. To use the WBGT Index as a control of physical activity, the following guidelines from TB-M.ED-175 are provided.

1. When the WBGT Index reaches 82, discretion should be used in planning exercise for unseasoned personnel.

2. When the WBGT Index reaches 85, strenuous exercises such as marching at standard cadence should be suspended for unseasoned personnel during their first three weeks of training. At this WBGT Index, training activities may be continued on a reduced scale after the second week of training.

3. Outdoor classes in the sun should be avoided when the WBGT Index exceeds 85.

4. When the WBGT Index reaches 88, strenuous exercise should be curtailed for all recruits and other trainees with less than 12 weeks training in hot weather. Hardened personnel after having been acclimatized each season, can carry on limited activity at WBGT indices of 88 to 90 for periods not exceeding six hours a day.

D. The WBGT Kit is enclosed in an aluminum case. The case is kept closed with a miniature stainless steel catch. The threaded hole in the bottom of the case is used

to attach the case to a standard lightweight photographers tripod that is not supplied with this kit.

1. The kit is opened by disengaging the catch and lifting the cover.

2. Lift the thermometer assembly up and out (See Figure 1).

NOTE: Examine the column of each thermometer. If the liquid has separated, heat the bulb slowly and carefully until the liquid reunites.

CAUTION: Never use a match or any kind of open flame to heat a thermometer bulb. Use a warm liquid only.

3. Wet the wet bulb wick thoroughly. NOTE: The wick is cotton and is 5-inches long with a knot I-inch from one end. The end nearer the knot is pushed into the reservoir and the other end is slipped on the thermometer bulb (See Figure 1). The water reservoir should be filled with clear, preferably deionized or distilled water and utilized as indicated. The water should be changed daily and the wick washed with soap and rinsed thoroughly. To avoid error in the measurement of the wet bulb temperature, the water in the reservoir must be free of salt and soap.

4. Hold the kit with the thermometers toward the sun, with the -“black globe” thermometer closest to the sun. Wait 10 minutes for stabilization of temperatures.

5. Review the instructions on the right side of the slide rule (WET BULB-GLOBE TEMPERATURE INDEX CALCULATOR). Assume for purposes of instruction that the Black Globe (BG) temperature reading is 120, the Wet Bulb (WB) temperature reading is 80, and the Dry Bulb (DB) temperature is 100.

    a. Move 80 on the Wet Bulb Temperature (WB TEMP) scale so that it is directly under 100 on the Dry Bulb Temperature (DB TEMP) scale.

    b. Find 120 on the Black Globe Temperature (BC TEMP) scale.

    c. Read Wet Bulb Globe Temperature Index (WBGT INDEX) at the Black Globe Temperature (BC TEMP).

    d. If you have performed the slide rule movement correctly, the Index should read 90.

    e. <u>CAUTION</u>: After use, empty the water reservoir to prevent wetting or rusting of parts in the kit.

f. The kit contains, in addition to the parts shown in Figure 1, the following spare components: 1 each transparent perforated plastic shield, 1 each water reservoir, 18 inch extra wick.

MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX G

CASUALTY ASSESSMENT EXERCISE SCRIPTS

NOTE: Use the new version of the Field Medical Card, DD Form 1360, dated Dec 1991.

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PATIENT 1

About **6 hours ago** artillery shells started falling near the patient's unit location. The Individual Chemical Agent Detector (ICAD) worn by a U.S. Marine Corps liaison officer began to sound off shortly after the attack began and the alarm "GAS" was given. The patient put on his MOPP gear and then noted his mask was about 25 meters away. While running to get his mask he fell face first into a puddle of what he thought was water with some motor oil in it. After a few minutes he wiped it off with his sleeve but never used the M291 SDK.

About **2-3 hours ago** his eyes became irritated. About **1 ½-2 hours ago** his face began to burn and itch and his eyes began to hurt very badly. This has progressed to severe erythema and loss of vision **about 1 hour ago**.

MOULAGE:

Reddened face.
Complete MOPP IV without mask.
M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots.

FIELD MEDICAL CARD:

Block 3: Place an X on the face and place an X in the block next to "burn".
Block 9: Write the following in this block;
Pain in the face and eyes (2-3 hours)
"Can't see"
Block 13: Write the following in this block;
Face burn.
Block 14: Write the following in this block;
No treatment given.

ACTING:

Constantly complains of pain on face and particularly in the eyes.
Also complains that he cannot see.
No problems breathing.
In distress

AGENT SIMULATED: Mustard

TRIAGE:

Triage category is delayed (certainly not minimal – minor injury, rapid return to action, and not an immediate – he is in distress, but no life saving measures are needed).

ACTION AFTER TRIAGE:

There may be a tendency to send this patient to the emergency treatment are for analgesic and/or to watch respiratory status. It is fine that the students think this way.

Let the give an analgesic and insure them this patient will be carefully watched through decontamination.

Decontamination should be ambulatory (despite loss of vision).

PROGNOSIS:

This patient's prognosis is good. The patient will not return to duty immediately and will recover form the burn. The involvement of the cornea and respiratory tract are unknown and will effect when this patient returns to duty.

PATIENT 2

This patient was dismounted from his M2 Bradley Infantry Fighting Vehicle (BIFV) and was about 10-15 meters away when an enemy anti-armor round impacted on the driver's hatch. The vehicle immediately caught fire and he ran back to assist in rescuing a trapped crewman. The patient attempted to avoid the black smoke by crawling up the ramp. As he dragged the injured crewman from the vehicle he was overcome by the smoke and could not continue the rescue. The soldier was ordered in MOPP IV because the ambulance had to move through a contaminated area. However, he removed his mask secondary to SOB. He has been short of breath (SOB) and increasingly dyspneic for the past **3 hours**. His SOB started approximately **4 hours** after the attack.

MOULAGE:

Your moulage (makeup) will be to darken an area under the nose and around the mouth.
Complete MOPP IV with mask either in hand or carrying case
M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots.

FIELD MEDICAL CARD:
Block 3: Circle the mouth and nose and write 'soot' by the circle. Also, place a '?' in the box for 'airway/trache'
Block4: Place an X in the box for 'alert/alerte'
Block5: Write '100' in this block
Block 9: Write the following in this block:

Breathed smoke from vehicle hit by enemy fire
SOB
R-30 P-100 SBP- 140

ACTING:
You should be standing when the triage officer arrives. Speak haltingly between short, chopphy breaths. You have chest tightness and you are SOB, and it is gradually getting harder to breathe. You cough lightly and only occasionally.

AGENT SIMULATED: Perfluoroisobutylene (PFIB). Combustion by-product from the burning of Teflon, which is used on many components, found in modern vehicles.

TRIAGE:
Carbonaceous soot around airway and given history require this patient should be triaged as immediate for airway intervention-intubation. If unable to intubate secondary to skill level, personnel, or equipment deficiencies, should consider urgent evacuation priority to next echelon if assets available.

ACTION AFTER TRIAGE:
Quickly check for liquid contamination. Liquid contamination, nerve or vesicant, would not be likely given the particular history, but still need to be excluded before evacuation.

PROGNOSIS:
This patient's prognosis is guarded. Due to the relatively short latent period, the chances of going on to develop fatal pulmonary edema are high. A therapeutic outcome will depend more on early evacuation rather than by any specific medical treatment that can be provided by this echelon of care.

PATIENT 3

History is scanty on this patient. He was found by a medic wandering through the field and falling down, running into things, and in general appearing confused.

MOULAGE:

None.
Complete MOPP IV.
M9 detector paper on upper right arm, left wrist and right ankle.

FIELD MEDICAL CARD:

Block 9: Write the following in this block:
Found wandering in the woods.
Block 13: Write the following in this block:
Blind? Confused?
Block 14: Write the following in this block:
No treatment given

ACTING:

Complains that he cannot see.

This patient should be carefully coached. He is not confused, disoriented, hallucinating, etc., except in so far as he might be confused and disoriented because of lack of sight (Where am I?, Who are you?). Can give a reasonable history (if asked). Does not know what happened to him except that he was in the middle of chemical attack and suddenly he could not see. Is concerned, but not panicked by the lack of sight. He should be up, wandering around, and in a sense, difficult to manage.

AGENT SIMULATED: None

TRIAGE:

Triage category is minimal, although some may argue for delayed. Minimal because he can be treated on site, rather quickly (hopefully), and returned to action within a few days. A "delayed" label might suggest that this person could be set aside and neglected or overlooked – this is the wrong thing to do with this type of patient.

ACTION AFTER TRIAGE:

This patient should go to the ambulatory decon line (despite "loss of vision").

PROGNOSIS:

This patient's prognosis is good. The patient must be kept close to his unit and given care by psychological technicians. This patient is suffering form battle fatigue or some exotic reaction to the psychological trauma of coping with the fear and anxiety associated with the use of chemical weapons against his unit.

PATIENT 4

Approximately **20-30 minutes** ago, this patient was hit in the right outer thigh with bullet/shrapnel and then crawled through some oily liquid. A combat medic found him shortly afterward and applied a pressure dressing. About **5 minutes** ago, the soldier started shaking all over (arms, legs, trunk), developed significant SOB, and vomited.

When he presents he has a pressure dressing on the leg wound (obviously a wound with much bleeding, but no apparent bone involvement) and signs of moderate, becoming severe, nerve agent intoxication (generalized twitching, nausea and vomiting, copious secretions, gasping for air).

MOULAGE:

Torn and bloody right upper thigh area of the BDO pants leg.
Large bloody field dressing (pressure) on the wound.
Vomitus on BDO
Complete MOPP level IV.
M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots.

FIELD MEDICAL CARD:

Block 3: Place X over right outer thigh on figure and mark "wound" block with an X.
Block 4: Place an X in "verbal response" and "pain response."
Block 5: Write 110 in this box.
Block 9: Write the following in this block:
- Leg pain (20 min)
- Generalized twitching (5 min)
- Secretions (5 min)
- Retching (5 min)
- Difficulty breathing (5 min)
- BP 120/HR 110

Block 13: Write the following in this block:
- No bone injury (20-30 minutes ago)

Block 14: Write the following in this block:
- Pressure dressing

ACTING:
You can answer questions well enough to let students know what happened to you
You answer questions between efforts to gasp fir breath
Generalized twitching and shaking of arms, legs, and body
Secretions from mouth and nose (if it can be arranged)
Extremely distressed

AGENT SIMULATED: Nerve agent (V or G series)

TRIAGE:
Immediate for chemical; delayed for conventional wound

ACTION AFTER TRIAGE:
The patient should be taken immediately to the emergency treatment area and given three (3) nerve agent antidote kits followed by one (1) CANA. Watch for recurrence of nerve agent S&S. When stable, proceed to litter decon.

PROGNOSIS
The patient's prognosis is good with immediate treatment.

PATIENT 5

This patient is a medic. About **20 minutes ago** he found patient #4 with a leg wound and started to apply a pressure dressing to his leg. Because he had some difficulty performing this task he took off his chemical protective gloves to work better.

About **5 minutes ago** he began to feel uneasy. A feeling of weakness and nausea, which progressed until now when he presents with great difficulty breathing, generalized tremors, twitches, retching, and large amounts of secretions, followed this.

MOULAGE:

Complete MOPP IV.
M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots.

FIELD MEDICAL CARD:

Block 1: Write "medic"
Block 9: Write the following in this block:
- No wounds
- Twitching (5 min)
- Difficulty breathing (5 min)
- Retching (5 min)
- Secretions (5 min)

Block 14: Write the following in this block:
- No treatment

ACTING:

Shaking/twitching
Grasping for air
Secretion (mouth and nose -?)
Retching and vomiting (it can be arranged)
Semiconscious (this and trouble breathing make it difficult for him to talk)

AGENT SIMULATED: Nerve agent (V or G series)

TRIAGE:

This patient should be triaged as an immediate casualty.

ACTION AFTER TRIAGE:

The patient should be taken immediately to the emergency treatment area and given three (3) nerve agent antidote kits followed by one (1) diazepam autoinjector.

PROGNOSIS:

This patient's prognosis is good with immediate treatment.

PATIENT 6

This patient is found stumbling along a forest path with vomitus on the front of his BDU, which is partly unbuttoned (patient feels hot). His mask carrier is open, but his mask is nowhere in sight. He says in a quiet and softly slurred voice that he was running from a large tank and that he got sick from running too fast.

MOULAGE:

MOPP 0 except that mask and injectors are missing from mask carrier; BDU partly unbuttoned; vomitus on front of BDU and T-shirt.

FIELD MEDICALCARD:

Heat casualty? T 100 P 120 BP 96/60. Skin and mouth dry. Red face. Rash on hands.

ACTING:

This patient speaks softly and with some slurring, as if he were very tired, even half-asleep. He says that he is weak and tired. If asked about the tank, he says that the last time he checked, he had outwitted the tank but now is trying to get away from a HummVee. He says that he is hot, and he keeps starting to take the rest of the BDU shirt off and then stops as if he had forgotten what he was going to do. Once in a while (but not too obviously), he picks some real or imaginary lint from his shirt and trousers—and occasionally from the air, too. If asked what he is picking from the air, he reports something (dandelion seeds drifting by, big fluffy snowflakes, etc.) that he obviously thinks he sees. If asked specifically about the sizes of the things in the air, he reports that they're smaller now than they were a little while ago. If asked about his mask and autoinjectors, he says that he had to give them to a man who looked just like the Jolly Green Giant. If asked about his sight, he says that he is wearing rose-colored glasses.

COMPLAINTS:

No real complaints, although if asked he admits that he feels hot. He is unable to say whether he is feeling better or worse.

AGENT SIMULATED:

Anticholinergic incapacitating agent such as BZ or Agent (DDx: atropine overdose, heat injury, anxiety)

TRIAGE:

This casualty should probably be considered to be delayed.

ACTION AFTER TRIAGE:

Ambulatory decontamination if patient is cooperative; otherwise, litter decontamination. Observation. He should be evacuated if he does not continue to improve or if his condition deteriorates.

PROGNOSIS:

Good as long as attention is paid to protecting him from himself and from hyperthermia and as long as it is realized that the patient may become paranoid as his other symptoms begin to resolve.

PATIENT 7

Approximately **2 hours** ago, artillery shells started falling near your unit. Shortly after the attack began, the Individual Chemical Agent Detector (ICAD) detected agent, the GAS alarm was given, and your unit went to MOPP IV. While crawling for cover, your BDO jacket became hung up on barbed wire so you removed it. You continued to crawl through the brush, then removed your t-shirt in order to wipe off all the 'oily' liquid you suddenly noticed on your chest and arms.

MOULAGE:
Upper body bare except mask and gloves
Trunk and upper extremities very red
M9 detector paper on right ankle. M9 paper has red spots

FIELD MEDICAL CARD:
Block 3: Place X on trunk (front and back) and both upper extremities (front and back) and an X in the block 'burn'
Block 4: Place an X in the box for 'alert/alerte'
Block 5: Write '94' in this block
Block 9: SBP- 130, red trunk and upper extremities

ACTING:
Severe burning and itching. Feels like skin is on fire. Requesting something for pain.

AGENT SIMULATED:
Mustard. Severe exposure

TRIAGE:
This patient should be triaged as expectant

ACTION AFTER TRIAGE:
The patient should be sent to ambulatory decontamination and evacuated to the next echelon if evacuation assets are or become available

PROGNOSIS
Guarded to poor secondary to severity of exposure.

PATIENT 8

This patient was policing around the latrine about **3 days ago**. The M8A1 chemical alarm went off. While running to get his MOPP gear he tripped and injured his right arm. Because of the injury, the patient managed to don his MOPP about **10 minutes** after the alarm sounded. No agent was detected and the all-clear was given **30 minutes later**.

He is alert and oriented with some difficulty answering questions. He appears to be working to breathe and complains of difficulty swallowing. His pupils appear dilated and react sluggishly to light; he states he has blurry vision and has been nauseated since breakfast **(8 hours ago).** Two other soldiers from his unit have similar problems and were taken to another hospital today. An hour ago on his way to the aid station he tripped and hurt his ankle.

MOULAGE:

Splint on ankle.
Complete MOPP IV
M9 detector paper on upper right arm, left wrist and right ankle.

FIELD MEDICAL CARD:

Block 3: Place an X on right ankle
Block 5: Place 90 in this block
Block 9: Write the following in this block:
- BP 100/-
- RR 24
- Slight drooping of the eyelids
- Pupils are dilated
- Difficulty swallowing and breathing
- Nasal secretions
- Complains of nausea
- Blurred vision

(The above nave progressed over the past 24 hours)
Block 13: Write the following in this block:
- Possible F/X ankle. ???
- Pain in ankle—1 hour

Block 14: Write the following in this block:
- No treatment given

ACTING:

He is anxious with garbled speech
Slight secretions from nose
Rapid, shallow respiration

AGENT SIMULATED: Botulism

TRIAGE:

This patient should be classified as immediate.

ACTION AFTER TRIAGE:

This patient should be taken to the emergency treatment area. If he stops breathing, he will need intubation and ventilation. This patient will need the botulism antitoxin. Needs an IV. Notify command of bio attack. This patient should be sent through litter decon.

PATIENT 9

This patient was caught in a chemical attack **30 minutes ago.** The patient left his protective mask about 25 yards away. After donning his mask, the soldier tripped, tore his left glove and twisted his left ankle. Approximately **15 minutes** ago the patient began to experience rhinorrhea, mild SOB, left hand twitching, and nausea. He gave himself one nerve agent antidote kit and now his secretions and breathing are about normal, his left hand has stopped twitching, but he continues to have nausea.

MOULAGE:
Field bandage on left wrist
Complete MOPP IV
M9 detector paper on upper right arm and right ankle (NO COLOR CHANGE ON M9 PAPER)

FIELD MEDICAL CARD:
Block 3: Place an X on the left wrist and left ankle
Block 9: Write the following in this block:
Mild difficulty breathing
Upset stomach and nausea
Rhinorrhea
Left hand twitching subsided
Block 14: Write the following in this block:
Sling
1 – NAAK, MK I

ACTING:
He is to indicate that his nose was 'running like crazy', but his breathing and secretions are now about normal if he is specifically asked whether they have changed. He should breathe normally with an occasional deep breath. If asked, he should also indicate that his left hand twitching has ceased but he continues to be nauseated.

He complains of pain in his wrist and ankle, which is why he came to the aid station.

AGENT SIMULATED: Nerve (V or G series)/liquid

TRIAGE:
Can triage immediate initially for additional antidote therapy, then delayed for conventional injury if condition continues to improve.

ACTION AFTER TRIAGE:
Spot decon left wrist now, the litter decon when stable

PROGNOSIS:
This patient's prognosis is excellent.

PATIENT 10

This patient received a small wound (gunshot) to the upper left arm about **4 hours ago** which ripped his left MOPP jacket arm. His squad was at MOPP I with jackets unzipped. As he tried to bandage his wound, he noted his chest, abdomen, and upper back (on the wound side) were covered with an oily liquid. The patient removed his BDO jacket and T-shirt. He tried to wipe the liquid off using the T-shirt. After applying a crude bandage to his wound he wiped his chest and back with his M291 skin decontamination kit (SDK) **10-15 minutes later**. He then put on his extra BDO jacket.

He now presents with the bandaged wound, slightly **reddened chest, belly, arm, and back**, and complaints of burning and itching in these areas.

MOULAGE:

Bloody bandage on upper left arm.
Complete MOPP IV with jacket open. No BDU or T-shirt
M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots.
Reddened skin in areas noted above.

FIELD MEDICAL CARD:

Block 3: Place an X on the chest, abdomen, upper back, and upper left arm
Block 9: Write the following in this block:
Pain in left arm
Itching , burning of chest, arm, abdomen, back (20-30 minutes)
Block 13: Write the following this block:
Arm wound
Block 14: Write the following in this block:
Field dressing

ACTING:

NOTE: Patient should be a male so makeup can be applied to chest, abdomen, back, and arm.

AGENT SIMULATED: Mustard

TRIAGE:

This patient should be triaged as delayed/expectant.

ACTION AFTER TRIAGE:

Should be sent to ambulatory decon.

PROGNOSIS:

This patient's prognosis is poor. Due to the extensive body surface area (BSA) covered by the mustard agent this casualty will die in several weeks due to sepsis, secondary infections, and other complications associated with gradual total destruction of his body's ability to fight off infections.

PATIENT 11

About 20 minutes ago this soldier, a combat lifesaver, was at MOPP 1 with his unit when one of the riflemen in his platoon was shot. The combat lifesaver, with a field rucksack and a medical kit bag, shouted encouragement to the injured soldier, ran to him, applied a dressing to the wound, and then started dragging him to a patient collection point 75 meters away across a field covered with dew. In the center of the field was a small creek, and as the combat lifesaver carried the rifleman across the creek he had to pass through what appeared at the time to be low-lying fog on both sides of the creek. An ambulance had been prepositioned at the collection point and immediately transported both soldiers to your facility. The rifleman is awaiting triage nearby. The combat lifesaver is still gulping air. He is coughing and sneezing and says (hoarsely) that he can't breathe properly. He is shaking all over and has marked rhinorrhea and tearing. He is starting to panic. He also appears to have been incontinent of urine.

MOULAGE:

MOPP 1 (mask in carrier) with M9 paper on arm; M9 paper has small red spots on it.

FIELD MEDICALCARD:

Short of breath; coughing and sneezing; secretions; twitching; feels warm; P 100; SBP 140.

ACTING:

"What did I get into back there?" "Why can't I breathe?" This patient shakes all over (partly from fright, partly from exhaustion) but without any violent movements (more like shivering). He also has nasal secretions and has to keep sniffing. His eyes also burn and itch. In the heat of the moment he has forgotten, but if asked specifically about any pre-existing medical conditions or about any recent illnesses he realizes that he coughs and wheezes when he exercises, that he gets really bad hay fever, and that he has had a headache and a cold for the last two days.

COMPLAINTS:

Shortness of breath; can't seem to stop coughing.

AGENT SIMULATED:

Reactive airway disease complicated by URI, environmental allergies, and fear (DDx: pulmonary agent, nerve agent, vesicant); possible unknown nerve-agent or vesicant exposure vs. false-positive reaction of M9.

TRIAGE:

Most likely delayed.

ACTION AFTER TRIAGE:

Ambulatory decontamination if patient is able; otherwise, litter decontamination.

PROGNOSIS:

Good if no agent exposure occurred (use PIE); but observation and rest necessary before excluding agent exposure.

PATIENT 12

This patient has a wound (gunshot) in his abdomen and apparently got splashed with liquid nerve agent on the skin or into the wound through a torn garment when he fell. This happened **15 – 20 minutes ago.** A dressing was applied to the abdominal wound, and the patient presents with moderate (but progressing to severe) nerve-agent intoxication.

MOULAGE:

Large bloody dressing on abdomen
Complete MOPP IV.
M9 detector paper on upper right arm, left wrist and right ankle. The M9 paper has red spots.

FIELD MEDICAL CARD:

Block 3: Place an X on the abdomen.
Block 5: Nothing
Block 9: Write the following in this block:
- Retching
- Twitching (5-10 min)
- Difficulty breathing
- Secretions (5-10 min)
- HR is 120-130
- BP is now 90

Block 13: Write the following in this block:
- Pain in abdomen (20 min)
- Abdominal wound (20 min)

Block 14: Write the following in this block:
- Pressure dressing

ACTING:

Breathing with difficulty
Retching/vomiting
Twitching, generalized
Secretions, mouth and nose
Semi-conscious

AGENT SIMULATED: Nerve agent (V or G)

TRIAGE:

This casualty is probably expectant; but could be classified as immediate.

ACTION AFTER TRIAGE:

This patient should go to the emergency treatment area and receive three (3) nerve agent antidote kits and one (1) diazepam autoinjector. An IV should also be started.

PROGNOSIS:

The patient's prognosis is poor. Due in great part to the type of wound and the indications that nerve agent was injected into the wound and onto surrounding skin. The delay in receiving treatment may hasten this patient's death but in all likelihood the casualty would die due to the amount of agent in the wound and the amount which has absorbed through the skin.

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MEDICAL MANAGEMENT OF CHEMICAL AND BIOLOGICAL CASUALTIES COURSE

FIELD TRAINING EXERCISE

APPENDIX H

CASUALTY ASSESSMENT EXERCISE NOTE-TAKING OUTLINE

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PATIENT NO. ______________________________

1. **DIAGNOSIS(ES):**
2. **TRIAGE CATEGORY : MINIMAL (M) DELAYED (D) IMMEDIATE (I) EXPECTANT (E)**
3. **TREATMENT: NO YES WHAT?**______________________________
4. **DECON: LITTER AMBULATORY**
5. **DECON PRIORITY: URGENT NON-URGENT**
6. **EVAC PRIORITY: URGENT PRIORITY ROUTINE**
7. **PROGNOSIS:**

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